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Fig.50. NEST AND EGGS OF MALLARD ON TREE TRUNK

within fifteen feet of it. I knew the mallard would not sit so close before, and when I climbed to the nest my fears were realized. I was just too late! There were the empty egg shells. Probably not far away were nine mallard ducklings, swimming and diving, not worrying in the least about how they got there.

on climbing, found five eggs. While I was up at the crow's nest the mallard duck and her mate both circled about above me, "quack-quacking" anxiously as they saw me perched so conspicuously in the tree top. This was the first time I had seen the drake at all and from their actions I concluded the eggs must be about ready to hatch. As I was leaving the slough bank I saw them both swimming together a short distance off, waiting to see if I would not go away.

I fully intended to watch faithfully from now on and visit the nest each day, on the chance that I might be on hand when the young were hatched out and ready to descend from the tree. But something detained me each day, until it was May 8 before I again went to Columbia Slough.

Not far from the nest tree I flushed the drake from a little pond in the nearby pasture. The ducks were evidently still in the neighborhood. I approached the tree cautiously but could see nothing on the nest, even when

CALL-NOTES AND MANNERISMS OF THE WREN-TIT

By J. GRINNELL

(Contribution from the Museum of Vertebrate Zoology of the University of California)

I WAS AROUSED to the point of assembling the facts for the present sketch by reading an account of the notes and habits of the Wren-tit in a certain popular book on California birds. The account referred to was so at variance with my own impressions of the bird in question that it led me to wonder

somewhat acrimoniously whether or not the author had ever taken the pains to acquire even a passing acquaintance with the bird; and this in spite of its being one of the commonest and at the same time the most distinctive species in California's coast district.

Yet, upon sober second thought, it may be more just to suppose that the discrepancies arose, in part, at least, from the different ways in which two people will hear the same sounds, or *think* they hear them. It is a difficult undertaking, too, for anyone to describe these sound impressions so as to be at all intelligible to some one else. This more charitable view is the one that I hope will be meted to me in case some keener observer than I finds errors in my description.

Contrary to published notions, the Wren-tit is without question one of our easiest birds to locate and catch sight of. The calls are given at such frequent intervals throughout the day, even in foul weather, that if there are any Wren-tits in the vicinity at all, it does not take long to determine the fact. It proves an easy task to ensconce oneself motionless in a thicket in the neighborhood and "squeak" the birds all about one. By lying on the ground beneath tall and dense chapparal, and "squeaking" judiciously, I have had a pair or even a family of the birds within arm's length of me again and again. Their curiosity even exceeds that of chickadees and jays.

The following is a concise analysis of the call-notes of the Wren-tit (*Chamaea fasciata*), devised with a view to conveying to the reader as nearly clear a notion as possible of what I think I hear myself. This analysis is based on fresh observations, notebook records "taken on the spot" during the past year. Previous impressions have been repeatedly verified. The station for most of my recent observations has been the tract of willow brush on the University Campus, Berkeley, about three hundred yards up Strawberry Canyon from the old Chemistry Building.

A. *Can be imitated closely by human whistle.*

1. Loud series of staccato notes all on same pitch but with decreasing intervals, the last of the series run together to form a trill: pit—pit—pit—pit—pit—tr-r-r-r. Several counts gave from three to five of the first, distinctly-uttered, notes.

2. Loud series of staccato notes all on same pitch but at equally measured intervals and not run together into a terminal trill: pit-pit-pit-pit-pit-pit. Several counts gave from three to fourteen notes in the series in the different cases.

3. Low, mournful, measured (but not staccato) series of slurred notes on nearly the same pitch; sometimes a scarcely-to-be-detected descent in pitch towards the last of the series: keer-keer-keer-keer-keer. From three to eleven of these constitute a series.

4. An extremely faint, single, but clear, "peep", only to be heard within ten feet of the birds.

B. *Cannot be imitated by human voice or whistle; a noise, like scratching of dry rough-barked weed stalks against one another.*

5. Harsh clicking sound, rather loud and set off in abrupt segments; an alarm note.

6. Low and prolonged; similar to last but run together, producing an effect as of the rustling of footsteps in dry leaves.

7. A single, very low "chuck", uttered by individuals of a pair when reconnoitering through dense brush within a very few feet of one another.

Number 1 reminds me remotely of the spring song of the California Brown Towhee; but it is *not* like the song of the Canyon Wren. There is no "descending" series of notes to warrant the absolutely erroneous book-name of "scale-bird"! Each of the different series of notes is uttered on precisely or very nearly the same pitch.

It often happens that one Wren-tit will begin its series of notes promptly after another has begun *its* series, so that the two series overlap. As the tone of voice varies among individuals, and possibly in the same individual at different times, there results from this overlapping a peculiar and often quite musical cadence. The tendency for individuals to answer one another across a canyon is often in evidence.

Number 3 recalls one of the notes of the Rufous-crowned Sparrow. Number 5 has been described as an "insect-like chirp", and as a "hissing or cricket-like note." It depends on the insect in the describer's memory! I have failed to think of any satisfactorily comparable noise to be heard commonly anywhere. As noted above, it can be reproduced after a fashion by rubbing dry, rough-barked weed-stalks against one another.

In past years I have been guilty of killing, for specimens, close to two hundred Wren-tits in various parts of California—a horrible confession, to be sure, but let us hope always to some good purpose. As one result, it has been established that there is no appreciable difference between the sexes in external appearance or behavior. The notes are all of them identical in the two sexes, as I have proven over and over again to my satisfaction by shooting the birds uttering them.

It is questionable, therefore, whether there is any regular nuptial *song*, and in this lack of a true song the wren-tit resembles the Bush-tit (see CONDOR, 1903, pages 85 to 87). There is also no song-season, the notes described being heard at any and all times of the year. They are particularly noticeable during the molting season, August, when most other birds are silent.

During most of the year the Wren-tit forages in pairs. Two or more pairs are often found in one neighborhood. In event of some exciting occurrence to attract attention, several pairs may be found congregated in one spot. From the nesting season through the summer to the time of fall dispersal family parties of from four to six Wren-tits, young with their parents, are the rule. Individuals and companies are more prone to wander during August and September than at other times of the year. I have seen them in late summer in the garden shrubbery of a city suburb, many blocks from any wild land. Wren-tits are pre-eminently non-migratory, however; they are one of the most *resident*, that is, most closely home-abiding at all seasons, of our birds, of similar status in this respect to the Brown Towhee and California Thrasher.

The generic name *Chamaea*, meaning "on the ground," is scarcely more appropriate than the specific name *fasciata*, meaning "striped"! The Wren-tit is not at all terrestrial in any of its habits, in the sense that a towhee, or a meadow-lark is. I do not recall ever having seen a Wren-tit scratch in fallen leaves or earth, or even walk upon the ground, save to a very limited extent in approaching a drinking place. This is essentially a *perching* bird, though it habitually affects a *low* zone of arborescent shrubbery.

The movements of the Wren-tit are relatively slow and dignified. There are no nervous twitchings of the wings, or other extreme mannerisms as with the kinglets. Articles of food—insects, seeds, and small fruits—are gathered in sober fashion, with moderate reaching out of the head in normal posture. There

is no inverting of the body, as with bush-tits or chickadees, and no creeper-like scaling of stems or branches.

The Wren-tit rarely undertakes flights of more than a few yards, just as short ones as necessary to carry it between bushes. Even when rapidly pursued it dodges under cover at every opportunity in preference to taking refuge in open flight. Indeed the harder pressed a bird may be, the more intent does it become on hiding away in the densest brush tangle to be found in the vicinity. The excessively short and rounded wing of the Wren-tit appears to be an index of its limited powers of flight, and of the fewness and shortness of such flights as are undertaken.

On the other hand the tail is of great length proportionally—another development repeated among birds which live in and among bushes. Aside from the white iris, which gives the bird a curious facial expression, the tail is the most prominent feature in the Wren-tit's appearance. This appendage is kept in almost constant vibration. In flight it is violently flapped down and up in alternate rhythm with each series of wing beats. At every change of position in hopping from twig to twig, the tail is jerked either laterally or antero-posteriorly in accentuated sympathy. When a series of notes is uttered, each separate note is accompanied by a twitch of the tail.

The tilt of the tail is generally most pronouncedly upward, but still never, when conditions for observation have been favorable, anywhere near vertical. This has usually been exaggerated both in published figures and descriptions. Sixty degrees from the horizontal is the very limit of elevation in my experience, and forty-five degrees is near the average. For normal position of tail and body in the Wren-tit, see Joseph Mailliard's photograph in *THE CONDOR*, 1906, page 47. When the birds are foraging unconcernedly through thick foliage the tail is often held out horizontally, and not infrequently even depressed. Degree of elevation of the tail seems to be a sort of index to degree of alertness or of excitement.

The plumage of the Wren-tit is notable for its great quantity and laxness. The bird always presents an overly fluffed-out or plump appearance, from which the great length of tail does not detract. There is thus lacking the trim appearance of a warbler or vireo. The whole *ensemble* of characters of the Wren-tit emphasizes, the more one considers them, the uniqueness of this avian type.

Taxonomists are still puzzled as to the proper disposition of the Wren-tit in their systems of classification. Sometimes the bird has been put into a sub-family within the family Paridae, the latter including also the titmice and chickadees. Again, the Wren-tit has been assigned full family rank all by itself, and its family, Chamaeidae, has been listed next to the Troglodytidae, or wrens. This last apparently expresses the latest published notions, though it has been suggested that there is possible affinity with the Timeliidae, or babbling thrushes, of the Old World.

As far as I know, the sources of evidence so far adduced have been structural characters only, chiefly skeletal and those external ones of plumage, feet and bill. It occurs to me to ask why we might not obtain some clue as to relationship from a comparative study of the songs and notes of the various birds concerned. The structures controlling the voice in birds are almost as extremely specialized as are those of plumage.

However, having offered the suggestion, the writer prudently retires from the field. The problem is too big to be handled from so small a basis of tangible fact. A classification and nomenclature of *sounds* is now needed, after the plan of Ridgway's "Color Standards and Color Nomenclature."